

6643-A-0444
Appendix COMS-13 (CMS)
2C87 KC130J CPT

700001
N61340-18-F-0071
04/09/2018

1.0 DEVICE TITLE.

DEVICE 2C87 KC-130J COCKPIT PROCEDURES TRAINER (CPT)

1.1 FUNCTIONAL AND GENERAL DESCRIPTION. *NOTE: Trainer descriptions are provided for reference purposes only and may not reflect the actual trainer configuration.* This CPT was built by Lockheed Martin Rotary and Mission Systems and based on the Multi-Function Training Aid (MFTA), in Orlando, FL. The KC-130J CPT provides a training environment that familiarizes students with the cockpit, consoles, and panels of the aircraft. The CPT provides enough cockpit capability to support the student's execution of checklists and malfunctions. However, the system is not intended to provide the checklists, but rather to provide the functionality necessary for the successful completion of the checklists. The CPT is comprised of individual systems that function interactively to create the effects required for a realistic training environment.

1.1.1 VIRTUAL FLIGHT DECK (VFD). The VFD emulates the cockpit arrangement for the KC-130J model to include pilot and co-pilot stations. All aircraft instruments, indicators, and controls are correctly located within the replicated cockpit and displayed on tactile panels. The hardware utilizes Trainer Peculiar Equipment to provide information to the Heads-Up-Display (HUD). Tactile controls and panels include: Cursor Control Panel (CCP), Avionics Management Unit (AMU), Reference Set/Mode Panel, Fuel Management, Air Conditioning, Exterior Lighting, HUD Control, Command/Navigation/Identification Management Units (CNI-MU), Auxiliary Power Unit (APU), Communication/Navigation/Breaker Panel (CNBP), Fire Handle/Engine Start Panel (FESP), Full Authority Digital Electronic Control (FADEC), Throttle, and heading/course to allow for simulated training. The Pilot and Copilot stations have seven (7) 21.5" touch screen monitors: three (3) up-front, two (2) center and two (2) swing-arm monitors to provide relative spatial relationship cockpit display and controls for side-by-side multi-seat vehicles; front HUD displays have two (2) 32" monitors mounted to display stands above the pilot and copilot instrument panels.

1.1.2 INSTRUCTOR /OPERATOR STATION (I/OS). The I/OS is located on a swing - arm panel next to the Pilot seat. The I/OS consists of a Touchpad with a Microsoft (MS)™ Windows 10 configuration. The I/OS controls the training scenario for starting up and shutting down the simulation, pausing and resuming the training session, and managing malfunctions during training.

1.1.3 CONTROL STATION. The I/OS serves as the Control Station.

1.1.4 COMPUTER SYSTEMS AND PERIPHERALS. The KC-130J VFD CPT utilizes the Lockheed Martin (LM) KC-130J SIMSII™ vehicle simulation and Prepar3D™ desktop simulation software packages. The Host Computer allows for Linux™-based Operational Flight Profile (OFP) integration. The Base station consists of an Overhead Arch for the overhead fuel and instruments of the KC-130J. The 2C87 CPT Cyber Security will be the responsibility of the Contractor Operations and Maintenance Services (COMS) Contractor. The Contractor shall comply with annual certifications and shall document system integrity to the Naval Air Warfare Center Training Systems Division (NAWCTSD) C-130 Program Management Team via the site Contracting Officer's Representative (COR) upon establishment of the Original Equipment Manufacturer (OEM) and NAWCTSD.

- 1.1.1.5. AIRCRAFT COMMON SUBSYSTEMS. N/A.
- 1.1.1.6. POWER SYSTEM. AC power required.
- 1.1.1.7. VISUAL/VIDEO SUBSYSTEMS. N/A
- 1.1.1.8. MOTION SYSTEM. N/A
- 1.1.1.9. COCKPIT AIR-CONDITIONING SYSTEM. N/A
- 1.1.1.10. MOTOR GENERATOR SETS. N/A
- 1.1.1.11. HYDRAULIC/PNEUMATIC SYSTEM. N/A
- 1.1.1.12. PLANNED MODIFICATIONS. N/A.

2.1 ILLUSTRATIONS. For system/subsystem drawings and documentation, refer to Operational and Maintenance Manuals located at each site.

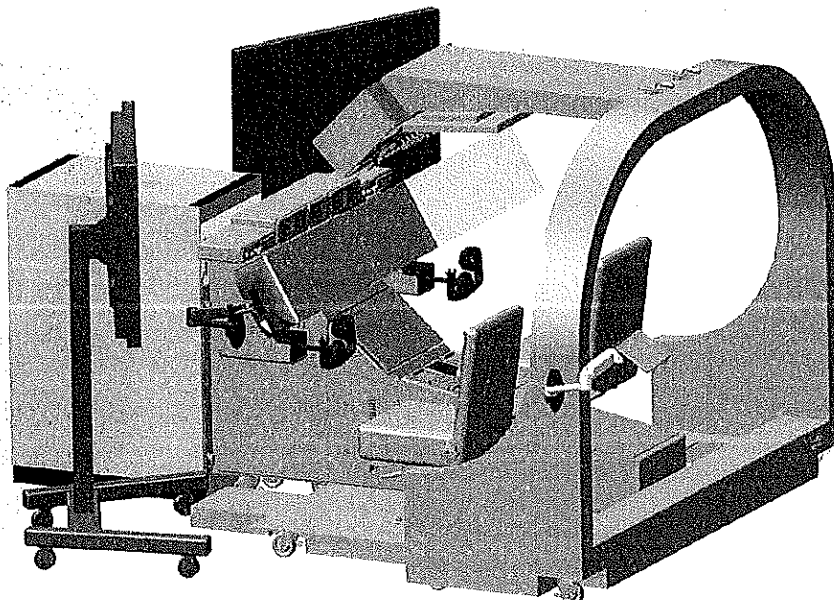


Figure 2.1: KC130J 2C87 CPT VFD (side view)

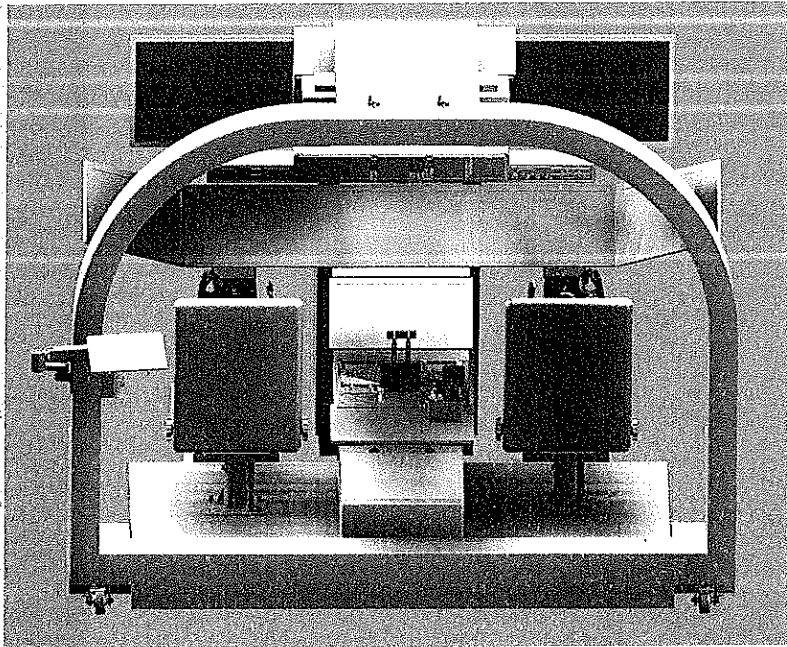


Figure 2.2: KC130J 2C87 CPT VFD (back view)

3.1 MISSION ESSENTIAL SUBSYSTEM MATRIX (MESM). N/A

4.1 AIRCRAFT COMMON EQUIPMENT (ACE)/TRAINER PECULIAR EQUIPMENT. N/A.

4.1.1 AIRCRAFT COMMON EQUIPMENT (ACE). N/A.

4.1.2 TRAINER PECULIAR EQUIPMENT. All device items/components/equipment not in Paragraph 4.1.1 are considered trainer peculiar equipment and the maintenance responsibility of the Contractor.

5.1 TOOLS AND SUPPORT EQUIPMENT/ SPARES PARTS / TECHNICAL DATA SUPPORT PACKAGE/ SOFTWARE SUPPORT MATERIAL. The formal inventory (i.e. tools/support equipment, spare parts, technical data support package, and software support material, etc.) shall be those items identified during the mobilization (MOB) period and stated in the yearly Inventory/Utilization Data Report. The Contractor shall comply with the development, maintenance and submission requirements for this report, as stated in the applicable DD Form 1423 Contract Deliverable Requirements List (CDRL) item.

6643-A-0444
Appendix COMS-14
2F179A P-3C TORT

PO0004
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08/01/2018

1.1 Device Title

Device 2F179A, P-3C Tactical Operational Readiness Trainer (TORT)

1.1.1 Functional And General Description

NOTE: Trainer descriptions are provided for reference purposes only and may not reflect the actual trainer configuration. The P-3C 2F179A TORT computer architecture consists of a two-tiered network topology. The first tier, the High Level Architecture (HLA) Network, is a Gigabit-Ethernet network that connects the host computer to the HLA Gateway. Although the HLA capability exists for this device, it is no longer implemented due to CyberSecurity Mandates. The second tier, the Trainer Local Area Network (LAN), is a separate Gigabit Ethernet network that connects the host and satellite computers comprising the P-3C 2F179A TORT Federate. The HLA network is used to communicate synchronization, simulation entity and environment data between the P-3C 2F179A TORT federate and other HLA-compliant federates and servers on the HLA network. The host computer, interfaced by middleware and the Federation Object Model (FOM) through the Run-Time Infrastructure (RTI) software executing on a separate PC, provides the interface to the HLA network for its self-hosted simulation models, as well as the simulation models executing in the P-3C 2F179A TORT federates satellite computers. The Trainer LAN is used to communicate simulation data between the central processing host and loosely coupled satellite computers that collectively provide the TORT simulation. Internally, the host and satellite computers execute under their own executives asynchronously from each other. Simulation control is requested by the IOS and coordinated among the satellite computers by the central processing host computer. Communication between satellite computers also takes place through the host using standard Transmission Control Protocol/Internet Protocol (TCP/IP) and User Datagram Protocol (UDP). Each satellite computer transmits its outputs to the Host computer, which, in turn, saves the state information needed for reset purposes, provides any filtering and translation needed by the consumer(s), and then distributes the data to the consumers. Security Classification is SECRET.

1.1.2 Trainee Station

The 2F179A TORT trainer utilizes five student-training stations, with a total of seven student operator-training positions. The five student-training stations are the Pseudo-Flight, Tactical Coordinator (TACCO), Navigation/Communicator (NAV/COM), Sensor Station 3 (SS-3), and Sensor Station 1 & 2 (SS-1 & SS-2) stations. Any or all of the five operator training stations and seven operator training positions may be occupied during a training session. The TACCO, NAV/COM, SS-3, and SS-1 & SS-2 station designs include an Alphanumeric Keyboard (ANK), Trackball (TB), Trackhandle (TH), and Programmable Entry Panel (PEP).

NOTE: Trackhandles and Trackballs are interchangeable with one another for user preference.

The PEP's are replicated units of what is used on the aircraft, with a commercial power supply. The trackhandles track similar to the actual devices on the aircraft, and the size and tactile feel is similar to the original equipment. The trackhandles at the TACCO, NAV/COM, Co-Pilot, SS-3, and SS-1 & SS-2 stations simulate the AIMS trackhandle.

All displays are Commercial-off-the-Shelf (COTS) equipment selected to resemble the aircraft display in form and function. Functional controls for brightness are provided with each display with some displays incorporating more functions such as contrast and screen size adjustment, etc.

Control panel hardware for student station controls are designed to accurately resemble the actual aircraft panels to ensure proper crew training. Specific switches and indicators are active as necessary to support crew coordination training. Each active panel is completely populated with switches, knobs, indicators, and displays to simulate the actual panels, although some of these items may not be functional. Switch positions, indicators, and Liquid Crystal Displays (LCD) are read and controlled through the Input/Output (I/O) Subsystem or through serial link to the host computer.

1.1.2.1 Tactical Coordinator (TACCO) Station

The TACCO is responsible for the direction and coordination of the ASW mission. Features simulated at the TACCO station Color High Resolution Display (CHRD), Programmable Entry Panel (PEP), Alphanumeric Keyboard (ANK), Trackhandle (TH), Trackball (TB), switches and status control indicators necessary to monitor and control TACCO functions.

- a. Weapon mission control for simulation of weapon armament and deployment. Indications of probable success or failure are provided at the IOS.
- b. Control sets for weapon systems.
- c. Harpoon Aircraft Command and Launch Control Set (HACLCS).
- d. Communications and Intercommunications System (ICS).

Each of these units is simulated to meet high fidelity standards, to represent exact touch feel and operation as the aircraft equipment. Simulation and functions associated with this equipment are realistic with respect to the TACCO'S duties and end results.

1.1.2.2 Navigation/Communications (NAV/COMM) Station

The NAV/COM Station provides the indicator and control equipment necessary to meet the training goals of crew coordination and subsystem operation. Features simulated at the NAV/COM station Color High Resolution Display (CHRD), Programmable Entry Panel (PEP), Alphanumeric Keyboard (ANK), Trackball (TB), Trackhandle (TH), switches, and status control indicators necessary to monitor and control NAV/COM functions.

- A. Communications systems (including ICS):
 - a. UHF2, UHF3 V/UHF
 - b. HF1 and HF2
 - c. Data Link LINK 11 and LINK 16
 - d. Teletype (TTY)
 - e. Satellite Communications (SATCOM) Data Entry Panel and Antenna Select
 - f. Multi-Mission Advanced Tactical Terminal (MATT)

g. OASIS III

- B. Navigation instrumentation plus digital displays of altitude and Global Positioning System (GPS) Control Display Unit (CDU) data. Digital Crew Interface (DCI), and various other panels. Each of these units is simulated aircraft equipment. Simulation of functions associated with this equipment is realistic with respect to the NAV/COM position functions.

1.1.2.3 SS-3 Crew Station

The SS-3 station provides the indicator and control equipment necessary to meet the training goals of crew coordination and subsystem operation. Equipment installed in the SS-3 station includes The SS-3 operator station provides aircrew coordination and analysis training.

Features simulated at the SS-3 operator station include:

- a. Color High Resolution Display (CHRD), Programmable Entry Panel (PEP), Alphanumeric Keyboard (ANK), Trackball (TB), Trackhandle (TH), switches, and status control indicators necessary to monitor and control SS-3 functions.
- b. AN/APS-137D(V)5 Radar System.
- c. AN/ASQ-81 Magnetic Anomaly Detector
- d. Radar controls and indicators.
- e. AN/ASX-4 Advanced Imaging Multi-Spectral Sensor (AIMS)
- f. Communications and Intercommunications Systems (ICS).
- g. ALR-95 Specific Emitter Identification (SEI)/ Electronic Specific Emitter Identification (ESEI) control panel.
- h. AIMS Control and Backup Control Panels.
- i. AIMS Turret Control Panel.
- j. Missile/IRDS Status Panel (MISP).
- k. Magnetic Anomaly Detecting Set (MAD) Submarine Anomaly Detector (SAD) controls.
- l. Digital Crew Interface (DCI).
- m. Selective Identification Feature (SIF) and Auxiliary (AUX) SIF control panels.
- n. Video Tape Recorders (VTR) and VTR controls.
- o. And various other panels. Each of these units is simulated aircraft equipment of various levels of fidelity. Simulation of functions associated with this equipment is realistic with respect to the SS-3 position functions.

1.1.2.4 Acoustic SS-1&2 Operator

The SS-1 & SS-2 Operator station provides acoustic functionality and training. Workload sharing capabilities at SS-1 & SS-2 exists to assist SS-3, as needed, in an additional multi-tasking role of the SS-1 & SS-2 operator station. Features simulated at the SS-1 & SS-2 station include:

- A. Color High Resolution Display (CHRD), Programmable Entry Panel (PEP), Alphanumeric Keyboard (ANK), Trackball (TB), Trackhandle (TH), switches, and status control indicators necessary to monitor and control SS-1 & SS-2 station functions.
- B. Communications and Intercommunications Systems (ICS).
- C. Sonobuoy (SONO) monitoring and control.
- D. AIC-41 Crew Station Control (CSC).